Class-IX

GEOGRAPHY, Chapter-10

A. Answer the following question:-

1. What are currents? What causes these currents?

Ans.1 An ocean current is a continuous, directed movement of sea water generated by a number of forces acting upon the water, including wind, the Coriolis effect, breaking waves, cabbeling, and temperature and salinity differences.

2. An apparent force that arises because of the earth's spin around its axis. Freely-moving objects are deflected to the right of their direction of motion in the northern hemisphere and to the left of their direction of motion in the southern hemisphere.

3. What happens when warm and cold currents meet? How is it important for fisheries?

Ans.3 When this warm current meet the cold current, the air above the cold current, causes the water vapour of the warm current to condense into tiny particles which form fog. They also tend to have high biological productivity, because plankton growth is encourage by the mixing of warm and cold currents. Some of the world's most productive fishing grounds are located where warm and cold currents converge.

4. What leads to the variation in the salinity of the sea water?

Ans.4 Evaporation of ocean water and formation of sea ice both increase the salinity of the ocean. However these "salinity raising" factors are continually counterbalanced by processes that decrease salinity such as the continuous input of fresh water from rivers, precipitation of rain and snow, and melting of ice.

5. Name a few important currents of the Pacific Ocean.

Ans.5 Main Currents in the Pacific Ocean are:-

i. North Equatorial Current (Warm)

ii. South Equatorial Current (Warm)

iii. Counter Equatorial Current (Warm)

iv. Kuroshio System (Warm)

v. Oyashio Current (Cold)

vi. California Current (Cold)

vii. Peru Current (Cold)

viii. El Nino or Counter Current (Warm)

6. What is Gulf Stream famous for?

Ans.6 The Gulf Stream is a strong ocean current that brings warm water from the Gulf of Mexico into the Atlantic Ocean. It extends all the way up the eastern coast of the United States and Canada. The Gulf Stream is a strong ocean current that brings warm water from the Gulf of Mexico into the Atlantic Ocean.

7. Name a few minor currents of the world.

Ans.7 Some of the minor currents in the world are the North Equatorial current, North Pacific current, Kuroshio Current and Alaskan Current.

8. What effect do the ocean currents have on the climate of a place?

Ans.8 Ocean currents act much like a conveyor belt, transporting warm water and precipitation from the equator toward the poles and cold water from the poles back to the tropics. Thus, ocean currents regulate global climate, helping to counteract the uneven distribution of solar radiation reaching Earth's surface.

9. What are the effects of tides?

Ans.9 Effects of tides:-

i. Tides have to remove the debris from the seashore.

ii. Strong tidal currents help ships to enter in shallow harbours, e.g., Calcutta (now Kolkata).

iii. In certain harbours tidal basins are constructed to store tidal water, e.g., London harbour.

iv. Tidal energy can be harnessed (as in France) to generate electricity, e.g., U.K and Australia.

v. Tides governed the schedule of fishermen day sail out and in with the tide.

10. What is the time differences between two tides?

Ans.10 Because the Earth rotates through two tidal “bulges” every lunar day, coastal areas experience two high and two low tides every 24 hours and 50 minutes. High tides occur 12 hours and 25 minutes apart. It takes six hours and 12.5 minutes for the water at the shore to go from high to low, or from low to high.

11. Explain by reference to actual examples the effects of ocean currents on climate, economy and fishing.

Ans.11 **Effects of ocean currents on climate:-**The ocean currents mitigate the air temperatures and help in the regulation of air routes. Warm and cold currents affect the rainfall as winds passing over the warm current pick up the moisture and give extra rains to British Columbia, British Isles, Japan and Queensland. Eastern margins of Australia and Africa have heavy rainfall due to the same reason.

Effects of ocean currents on economy:-Knowledge of surface ocean currents is essential in reducing costs of shipping, since traveling with them reduces fuel costs. In the wind powered sailing-ship era, knowledge of wind patterns and ocean currents was even more essential. A good example of this is the Agulhas Current (down along eastern Africa), which long prevented sailors from reaching India. In recent times, around-the-world sailing competitors make good use of surface currents to build and maintain speed. Ocean currents can also be used for marine power generation, with areas off of Japan, Florida and Hawaii being considered for test projects

Effects of ocean currents on fishing:-The mixing of the cold and warm currents provides ideal temperature conditions for the life of fish. The chief food of fish (plankton) is found in abundance in cold water. For example, off Newfoundland where Gulf Stream and Labrador (cold and warm currents) meet upwelling water brings in nutrient salts to the surface of the sea.

12. How are tides caused?

Ans.12 The Moon's gravitational pull generates something called the tidal force. The tidal force causes Earth—and its water—to bulge out on the side closest to the Moon and the side farthest from the Moon. These bulges of water are high tides. High tides and low tides are caused by the Moon. Tides move around Earth as bulges in the ocean. As the ocean bulges toward the moon, a high tide is created. The high tide on the side of Earth facing the moon is called the high tide.

13. Name the two movements in the ocean.

Ans.13 The horizontal and vertical motions are common in ocean water bodies. The horizontal motion refers to the ocean currents and waves. The vertical motion refers to tides. Ocean currents are the continuous flow of huge amount of water in a definite direction while the waves are the horizontal motion of water.

14. Name any two warm currents of the Atlantic Ocean.

Ans.14 Two warm currents of the Atlantic Ocean:-The Gulf Stream and the North Atlantic Drift.

B. Give reasons:-

1. The famous fishing grounds of the world are located where warm and cold current meet.

Ans. Areas where warm and cold currents meet tend to have high biological productivity, because plankton growth is encourage by the mixing of warm and cold currents. The convergence zone of cold and warm current bring a lot of plankton which are food for fishes.

2. Winds are the main influence on the circulation of ocean currents.

Ans. Surface currents are generated largely by wind. Their patterns are determined by wind direction, Coriolis forces from the Earth's rotation, and the position of landforms that interact with the currents. These currents move water masses through the deep ocean—taking nutrients, oxygen, and heat with them.

3. The tidal range differs from sea to sea.

Ans. The Tidal range is a vertical difference between the high tide and the succeeding low tide. Tides are the rise and fall of sea levels caused by the combined effects of the gravitational forces exerted by the Moon and the Sun and the rotation of the Earth. Thus, the tidal range differs from sea to sea.

4. The tides help in navigation.

Ans. The rise in the sea level due to the gravitational pull of the moon causes high tide. One of the main benefit of high tide is that it helps in navigation. When high tides occur the water level rises up, That time is safe for the large ship to enter and leave the harbour.

C. Write brief notes on the following:-

1. **Spring Tide:-**When the Sun, Earth and Moon are in a straight line, as they are at Full Moon and New Moon, the gravitational force is at its greatest because of combined force of Sun and Moon as they are pulling together. At this time the height tide is very high and low tide is very low. This type of Tides are called **Spring Tides.**

2. Neap tide:-When the Sun, Earth and Moon are not in a straight line, the Sun and Moon are not all not exerting combined force, i.e., they are not 'pulling' together and the gravitational pull is much less. At half moon, that is, when the Sun and Moon are 'pulling' at right angles, the force exerted is at its least and the difference between high and low tide is not large. These tides are called **Neap Tides.**

3. Gulf Stream:-The Gulf Stream is a strong ocean current that brings warm water from the Gulf of Mexico into the Atlantic Ocean. It extends all the way up the eastern coast of the United States and Canada. The Gulf Stream is a strong ocean current that brings warm water from the Gulf of Mexico into the Atlantic Ocean.

4. Labrador Current:-The Labrador Current is a cold current in the North Atlantic Ocean which flows from the Arctic Ocean south along the coast of Labrador and passes around Newfoundland, continuing south along the east coast of Canada near Nova Scotia. Near Nova Scotia, this cold water current meets the warm northward moving Gulf Stream.